

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. How does distributed processing improve the efficiency of networked systems?
 17. How does Wavelength Division Multiplexing (WDM) improve the capacity of fiber optic communication systems?
 18. What are the main challenges in implementing flow control mechanisms in data link protocols?
 19. Discuss the security considerations involved in Wired and Wireless LANs and how different devices can enhance network security.
 20. Explain the key hardware components used in IoT implementations and their functions.
-

NOVEMBER/DECEMBER 2025

**23UESC32B — DATA COMMUNICATION
AND NETWORKING**

Time : Three hours

Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What are the key criteria for evaluating a network?
2. Describe the main physical structures of a network.
3. Define an analog signal and provide an example.
4. What is a digital signal? Give an example.
5. What is a virtual circuit network and what advantages does it offer?
6. Explain the purpose of error detection in data transmission.
7. How does Bluetooth function in the context of Wireless LANs?



8. What is the role of a passive hub in a network?
9. Describe one advantage and one disadvantage of 5G networks.
10. What are some common applications of 5G technology?

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Evaluate the various categories of networks and their specific use cases.

Or

- (b) What challenges do network models face in the context of modern internet applications?

12. (a) What are the different types of guided media and how do they differ in terms of data transmission?

Or

- (b) Discuss the role of modulation techniques in analog signal transmission.

13. (a) How do cyclic codes improve error detection compared to linear block codes?

Or

- (b) Analyze the effectiveness of the checksum method for error detection in data transmission.

14. (a) Explain the concept of a gateway and its significance in connecting different networks.

Or

- (b) What are the implications of IP address exhaustion in IPv4, and how does IPv6 address this issue?

15. (a) How do the advanced features of 5G networks enhance connectivity compared to previous generations?

Or

- (b) Discuss the advantages and disadvantages of the Internet of Things (IoT) in terms of security and data management.